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ADDITIONS
TO THE
Fish-Fauna
OF
NEW SOUTH WALES

(No. 1.)

By

DAVID G. STEAD,

Naturalist to the Board of Fisheries for New South Wales.

Department of Fisheries, New South Wales.

[*Issued, August, 1907.*]

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DEPARTMENT OF FISHERIES, NEW SOUTH WALES.

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Additions to the Fish-Fauna of New South Wales.

(No. 1.)

By DAVID G. STEAD,

Naturalist to the Board of Fisheries for New South Wales.

IN the following paper, eighteen species of fishes are chronicled as additions to our known fauna.* They include the under-mentioned :—

- Dasyatis uarnak* (Forskål),
- Dasyatis sephen* (Forskål),
- Euleptorhamphus longirostris* (Cuvier),
- Mugil dussumieri* Cuvier and Valenciennes,
- Mugil waigiensis* Quoy and Gaimard,
- Epinephelus tauvina* (Forskål),
- Genyoroge sebæ* (Cuvier and Valenciennes),
- Cheilodactylus spectabilis* Hutton,
- Terapon jarbua* (Forskål)
- Emmelichthys nitidus* Richardson,
- Caranx (Alectis) gallus* (Linnæus),
- Elagatis bipinnulatus* (Quoy and Gaimard),
- Auxis thazard* (Lacépède),
- Germo germo* (Lacépède),
- Gasterochisma melampus* Richardson,
- Bramichthys woodwardi* Waite,
- Genypterus blacodes* (Forster),
- Sphæroides pleurostictus* (Günther).

* A preliminary record of the occurrence of all of these species, with the exception of two (*Euleptorhamphus longirostris* and *Cheilodactylus spectabilis*), will be found in the Proceedings of the Linnean Society of New South Wales for 1906 (Vol. xxxi, Notes and Exhibits, pp. 60, 61, 174, and 496)

It may be noted that nearly all of the above-mentioned are fishes of more or less edible value, while some are exceedingly important. On the other hand, fishermen and waterside folk generally, will be very sorry to learn that we have two more of those abominable pests of our waters—the Stingrays—than we had previously reckoned upon; one of them—*Dasyatis sephen*—being exceedingly dangerous. This Ray, it may be mentioned, appears to be quite common in the estuaries of some of our Northern rivers, and there is no reason why it should not ultimately be turned to account in an economic way, as its skin is known to be specially adapted for being turned into a very fine shagreen leather.*

FAMILY *DASYATIDÆ* (Stingrays).

Dasyatis uarnak (Forskål).—*Banded-tailed Stingray*.

A small example of this dangerous Stingray, measuring 305 mm. (12 inches) across the disk, was received during November, 1903, from the estuary of the Clarence River.

This species occurs commonly on parts of the Queensland coast, and is very widely distributed. Referring to its occurrence in the waters of India, Day states† that “wounds from their caudal spines are much dreaded. In one instance, an old man was admitted into the Civil Hospital in Cochin for mortification of the arm, due to a wound inflicted by one of these fish, which he attempted to drag out of the sea into a boat: it wound its tail round his arm and dragged its spine through the muscles nearly down to the bone.” Day further states that this species attains the large size of “5 feet or more across the disk.”

In our example (which is a male) from the Clarence River, the disk is a little broader than long. The tail is three times the length of the body.

On account of the pretty banded appearance of the tail in this species—a feature which appears to be more pronounced than in any of the allied forms—I have applied to it the vernacular name used above.

* A fuller reference to this matter will be found in my recently-published “Fishes of Australia” (1906), pp. 255, 256.

† Day: Fishes of India, p. 738.

Dasyatis sephen (Forskål)—*Cow-tailed Stingray*.

PLATE I.

On the 10th of January, 1905, a female example of this species was forwarded to the Department of Fisheries for determination by Mr. F. W. Smithers, Inspector of Fisheries. It was captured in the Clarence River, and measures 475 mm. ($18\frac{3}{4}$ inches) across the disk. On the 7th of February a male specimen, measuring 356 mm. (14 inches) also arrived from the same locality.

As *Dasyatis sephen* has not been previously recorded from the coast of New South Wales, these records mark an addition to our already heavy list of these dangerously armed Rays, which are—for very obvious reasons—the objects of the fisherman's most undisguised hatred.

In forwarding the specimens, Inspector Smithers mentioned that this kind of Ray is more dangerous to handle than any of the others, as it can use its barb or "sting" on a fisherman who has hold of it even between the eyes, this being, generally speaking, the only safe way of manipulating Stingrays.

It transpires that this fish is known to some of the Clarence River fishermen as "Cow-tailed Stingray"—a name which I have retained, as, owing to the shape of the tail, it appears to be peculiarly appropriate. The tail is very supple and muscular, and it is armed in both cases with a single, acute, long, barbed spine.

Day gives as the habitat of this species "Red Sea, through the Seas of India, to the Malay Archipelago and beyond;"* and Macleay mentions its occurrence in saltwater in the lower Burdekin River, Queensland;† while Ogilby also mentions two specimens (probably identical with Macleay's) from the Burdekin River, as well as one from South-eastern New Guinea.‡

In Indian seas, this Ray grows to an enormous size, and must be exceedingly formidable; Day mentioning one example that measured 5 feet 10 inches across the disk. He also states that

* Day : Fishes of India, p. 740.

† Macleay : P.L.S., N.S.W., viii, 1884, p. 212.

‡ Ogilby : Catalogue of the Fishes in the collection of the Australian Museum. Part I ; Recent Palæichthyan Fishes, 1888, p. 20.

the species is most common during the south-west monsoon, when it approaches the shore from the deeper water. Whether or not our representatives of the species attain to the same dimensions as those of India remains to be seen.

In response to an inquiry in regard to their relative abundance, size attained, and their habitat in the Clarence River, Inspector Smithers, when forwarding the second specimen, wrote: "I have watched the hauls of fishermen, and have hauled myself, and have seen at least fifty caught, the largest being 2 feet 3 inches wide."

"I have found most of the rays in the channel known as 'Micalo,' between Micalo and Palmer's Islands; also in Baker's Creek, which runs into Harwood Island, at the back of Turkey Island; bottoms generally mud."

"I cannot hear of any being caught above Maclean. Some men from here returned last night and tried from Maclean to Ulmarra without getting one."

FAMILY *SCOMBRESOCIDÆ* (Garfishes and Long-Toms).

Euleptorhamphus longirostris (Cuvier).—*Slender Garfish*.

An example of this species, measuring 457 mm. (18 inches*) was captured at Bateman's Bay during January, 1907, and was forwarded to this office; this apparently forming a first record of the occurrence of this species in the waters surrounding the mainland of Australia. The specimen was captured by Mr. J. Cootes while hauling for Sea Garfish (*Hyporhamphus intermedius*).

As no description of this species is to be found in Australian literature, I take the opportunity of giving one, based on this specimen.

D. 24; A. 22; P. 9; V. 6. Scales about 107.

Length of head (without lower jaw) 6·85, greatest height of body† 12·15, length of caudal fin 6·60 in the length from point of snout to insertion of caudal fin. Longitudinal diameter of eye 3·30, length of snout 3·05, height of head through

* The actual length, in life, would slightly exceed that given, as the tip of the lower jaw and the lower caudal lobe were both slightly broken.

† Equal, at insertion of pectoral fin, halfway between insertion of pectoral and ventral fins and at base of first anal ray.

DASYATIS SEPHEN (Forskål)—*Cow-tailed Stingray*.

centre of eye 2.20, width of head through centre of each eye 2.40 in the length of the head (without lower jaw). Free portion of lower jaw (beak) more than twice the length of the remainder of the head.

Body very long and slender, greatly compressed, the sides flattened, and the middle of the back with a sub-carinate ridge. Head compressed, somewhat flattened on top, the lower surface narrowly constricted. Eye, round, large; its diameter contained 1.20 in the length of the postorbital space, and equal to the width of the interorbital space, which is broad and in the centre concave. Top of head posteriorly convex. Nasal cavity of moderate size, deep, and with a well developed fleshy flap. Gill-opening large; the isthmus long thin and narrow. Gill-rakers fairly short, moderately numerous, somewhat slender and pointed. No pseudobranchiæ. Tongue rather thick flattened and fleshy.

Teeth in small villiform bands on jaws and vomer.

Fins : Dorsal begins well in advance of anal; rays long and weak; longest ray 1.30 in the length of the head (without lower jaw), and 8.80 in the length from point of snout to insertion of caudal fin. Anal similar in shape to dorsal, but shorter, its longest ray 1.50 in the length of the head (without lower jaw), and 10.20 in the length from point of snout to insertion of caudal fin. Pectoral very long, twice the length of the head (without lower jaw), and 1.50 into the distance between its insertion and that of the ventral fin. [When the pectoral is at rest it is inclined obliquely downwards; and, as the fin is transversely concave (anteriorly), the pressure of the water against it during the progress of the fish must constantly tend to keep the fish at the surface of the water, and perhaps also to assist it in taking flying leaps out of the water.] All the rays of the pectoral are strong, and the uppermost one is very broad in the basal third. Ventral very small; its length equal to the horizontal diameter of the eye; its base a little posterior to the centre of the distance between the bases of the pectoral and caudal. Caudal deeply forked, the lower lobe much the longer.

Scales of moderate size, thin, and deciduous.

Lateral line well developed, running continuously along the lower part of the body to the base of the caudal fin.

Color in the fresh example, pale bluish-silvery above, the scales on the back having darker edges. Lower parts of sides and belly silvery-white. Upper part of head deep blue, side silvery. Beak bluish-black.

I have used the name "Slender Garfish" because of the highly attenuated form. In the Hawaiian Islands, where the species is used commonly for food, it is known under the name of "Iheihe."*

MEASUREMENTS OF *Euleptorhamphus longirostris* (Cuvier).

Length overall (in millimeters)	* 457
Length overall from point of snout	364
Length from point of snout to base of caudal fin	316
Length of head in hundredths of length from point of snout to base of caudal	14.6
Length of caudal fin	15.2
Greatest height of body	8.2
Height through centre of eye	6.6
Least height of caudal peduncle	2.8
Longitudinal diameter of eye	4.4
Width through centre of each eye	6.0
Width at insertion of pectoral fin	4.4
Width above insertion of ventral fin	4.1
Width below first dorsal ray	3.8
Width at least height of caudal	1.9
Length of snout	4.7
Length of postorbital portion of head	5.4
From point of snout to insertion of pectoral fin	17.1
From point of snout to insertion of ventral fin	59.5
From point of snout to beginning of dorsal fin... ..	66.8
From point of snout to beginning of anal fin	71.2
Length of base of dorsal fin	27.8
Length of base of anal fin	24.1
From base of last dorsal ray to vertical from base of caudal fin	5.7
From base of last anal ray to vertical from base of caudal fin	5.7
From base of caudal to bottom of caudal cleft... ..	5.4
Length of pectoral fin	28.5
Length of ventral fin	4.4
Longest ray in dorsal fin	11.4
Longest ray in anal fin	9.8
Length of upper caudal lobe	9.2

* Both tip of lower jaw and end of lower caudal lobe slightly broken.

* Jordan and Evermann : Bull. U. S. F. C. xxiii (1), 1903 (1905), p. 128.

FAMILY *MUGILIDÆ* (Mulletts).**Mugil dussumieri** Cuvier and Valenciennes.

During February, 1905, Mr. F. W. Smithers, Inspector of Fisheries, forwarded to this Department a Mullet captured in the Clarence River, which I determine as above. The specimen measured 333 mm. ($13\frac{1}{8}$ inches), and weighed $14\frac{1}{2}$ ounces. Mr. Smithers stated that a number of others were captured at the same time, the one forwarded being the smallest, while some of them weighed as much as 2 lb. He also drew attention to the fact that the fish was "in spawn," and stated that the large ones were in the same condition.

I should here state that in this example there are none of the teeth in the upper jaw described by Day* as occurring in *Mugil dussumieri*, but it appears to be questionable whether they are a constant character.

It may be that this species is identical with Cuvier and Valenciennes' *Mugil subviridis*†; and, if that be so, then the latter must take precedence.

The occurrence of this fine edible mullet in our waters will be noted with interest by many, and it will form an acceptable addition to our local food-fishes.

Mugil waigiensis Quoy and Gaimard.—*Diamond-scaled Mullet*.

In November, 1903, whilst netting in a small lagoon inside the breakwater at Ballina, Richmond River, Mr. H. C. Dannevig obtained a small mullet which proved to be of the above species. This is quite a young example, measuring 153 mm. (6 inches).

The occurrence of this isolated example in this lagoon is very singular. Mr. Dannevig was of opinion that there was no opening in the breakwater large enough to permit of its passage (in its present size) and that consequently it must have arrived there either in the egg-, or very small fry-, stage.

The vernacular name here applied to this species is that used on parts of the Queensland coast where it is familiarly and favorably known as a food-fish.

* Day : Fishes of India, p. 353.

† Cuvier and Valenciennes : Hist. Nat. Poiss., xi, p. 115.

(I might here add that a number of large specimens of *Mugil waigiensis* from Cleveland Bay, Queensland, were received during June, 1903, through the courtesy of Mr. John Mackay, Port Master at Brisbane.)

FAMILY *SERRANIDÆ* (Perches).

Epinephelus tauvina (Forskål).

PLATE II.

During February and March, 1906, a number of examples of this species were forwarded to the Eastern Fish Market, Woolloomooloo, Sydney, from the Macleay River, and two specimens were received by the Department of Fisheries.

Macleay described, during 1883, in the Proceedings of the Linnean Society of New South Wales,* under the name of *Serranus estuarius*, a fish measuring 16 inches, taken in the Mary River, Queensland, which, he stated, was evidently a salt-water fish. There appears to be no doubt that this is identical with *Epinephelus tauvina*.

This large Serranid Perch attains a length of over 4 feet, and is very widely distributed.

One of those forwarded to Sydney from the Macleay River measured about 3 feet.

This record adds another fine edible fish onto our already extensive list.

Genyoroge sebæ (Cuvier and Valenciennes).—*Government Bream*.

PLATE III.

A fine example of this handsome species was received during July, 1904. It had been captured at Broken Bay.

It is here chronicled for the first time as an addition to our Fauna.

The following detailed description, drawn from this specimen, will be of value to students of Australian ichthyology, and should render easy, determination of the species. The superb coloration

* Macleay : P.L.S. N.S.W. viii., 1883, p. 200.

EPINEPHELUS TAUVINA (Forskål).

of this form, places it amongst the most beautiful of our many charmingly-colored fishes.

D. XI. 16 ; A. III. 10 ; V. I. 5 ; C. 17 ; P. 17.

L. Lat. 50 ; L. Trans. 11/24.

Length of head 2.45, greatest height of body (at ventral fin) 2.15, height of body at anterior end of base of anal fin 2.60, length of caudal fin 3.50 in the total length (without caudal). Horizontal diameter of eye 5.55, vertical diameter 6.50 in the length of the head ; the former 1.90 and the latter 2.20 in the snout, which is 2.95 in the length of the head. Postorbital portion of head 1.95 in its total length. Distance from inferior margin of eye to lower profile of head, 2.35 in the length of the head, and exactly equal to the length of the base of the anal fin. Height of head at occiput 1.20 in the length of the head and 2.90 in the total length. Interorbital space highly convex, its width 4.35 in the length of the head. Eye half its diameter distant from the upper profile of the head. Distance between anterior and posterior nostrils equal to half the interorbital width. Anterior nostril small, tubular, and situated in a shallow fossa ; posterior nostril large, ovate, oblique, and about equidistant between anterior nostril and nearest part of the border of the eye. Upper profile of head slightly concave ; the centre of the concavity lying in front of the lowest fourth of the eye. Upper jaw longer than lower. Cleft of mouth somewhat oblique, the maxilla reaching to the vertical from the first fifth of the eye. Teeth strongest and most regular immediately above and below the notch, which is deep. Interopercular knob conspicuous. Least depth of caudal peduncle 3.15 in the length of the head, or 7.80 in the total length.

Teeth : Jaws with an inner band of villiform teeth and an outer irregular row of slightly curved cardiform ones, which are longest and most acute in the anterior portion of the upper jaw.

Fins : Length of base of dorsal fin (direct from point to point) 1.80, of anal fin 5.75 in the total length ; the latter 3.20 in the former. Third and fourth (longest) dorsal spines equal in length, 2.50 in the length of the head, 2.85 in the greatest height, or 1.50 in the longest dorsal ray (seventh), which is 1.65 in the length of the head and 4.05 in the total length. Third (longest) anal spine 3.15 in the length of the head, or twice in the longest

anal ray, which is a little longer than the longest dorsal ray] Length of pectoral 1.05 in the length of the head, 2.50 in the total length. Length of shortest caudal rays, 2.05 in the length of the head.

Scales : Snout and upper portion of head naked, with exception of small patch consisting of two rows of scales on the temporal region, at a little distance from which the body scales begin. Naked portions profusely covered with minute pores. Opercle scaly. Interopercle with a single row of scales. Cheeks with a long, narrow—almost vertical—irregular patch, consisting of several rows of scales; otherwise naked and covered with pores like those of the snout. Base of dorsal fin enveloped for about two-sevenths of its length with a scaly sheath; base of anal fin likewise for about one-third of its length; base of caudal fin also scaly.

Lateral line curving upward till the tenth and eleventh scales are reached; from there descending in almost a straight line to the caudal peduncle; being continued right out along the scaly caudal sheath.

Color : Ground color of body and head of a beautiful roseate tinge. Pectoral fin yellowish-pink. Ventral fin with the rays roseate, and the membrane black. Spinous dorsal fin with the spines pinkish-white, and the membrane dusky, with the exception of the posterior portion, which is marbled with the same roseate hue as the body. Soft dorsal with the rays roseate, the upper portion of the membrane lying between the first and seventh rays being dusky, while that between the remaining rays is pinkish-white. Caudal fin rays roseate, membrane light pink, the outer rays of the end of each lobe being dusky for about one-third of the length. There are three broad bands of a deep reddish-brown; one, the widest, crossing the body vertically, and lying between the fourth and seventh dorsal spines, a little greater in its breadth than the least depth of the caudal peduncle. The first band runs from the first dorsal spine in an oblique direction across the eye to the anterior portion of the maxilla, gradually narrowing as it reaches the latter. In its greatest width, which is a little above the eye, it is 1.25 the vertical diameter of the eye. The last band extends from the base of the last dorsal spine, is boomerang-shaped, curving backwards and

GENYORGE SEBÆ (Cuvier and Valenciennes)—*Government Bream*.

down on to the inferior portion of the caudal peduncle, ending at the insertion of the caudal fin. The whole fish presents a most handsome appearance when fresh. The iris is a beautiful roseate, with some finely-dotted dusky patches.

Total length of specimen (overall), 370 mm. ($14\frac{3}{8}$ inches).

According to Day,* this species ranges from the Red Sea and the East Coast of Africa, through the Seas of India to the Malay Archipelago. Macleay† records it from North Australia and Percy Islands; and Saville-Kent‡ mentions it as occurring on the Queensland coast, and states that it is known as "Government Bream."

As the last-named author's observations are of some value, as well as of general interest, they are here quoted in full. He writes: "A handsome representative of the perch family, *Gynogoriscus sebae*, C. & V., commonly taken throughout the Barrier district as far south as Port Denison, and also in the Gulf of Carpentaria, is popularly known as the 'government bream'; and has received its distinctive title with reference to the broad-arrow-like mark, with the point directed vertically, which decorates each side. It grows to a weight of several pounds, is much esteemed for the table, and has been forwarded in some quantities, in a smoked condition, from Sweer's Island, in the 'Gulf,' to the Normanton and Croydon markets. When alive in the water, or freshly taken from the sea, the ground colour of this fish is nearly white, with pale-pink edges to the scales; the characteristic broad-arrow-like bands being a bright red. On removal from its native element these tints quickly darken, the white ground turning to red and the arrow-shaped mark almost to black."

Day§ gives as one of the native Indian names for this fish "*Nai-kerruchi*," meaning "smelling like a dog."

* * * * *

Since the foregoing was written, a magnificent example of this gorgeous species, measuring 725 mm. ($28\frac{1}{2}$ inches) was captured at Coff's Harbour and forwarded for sale to the Eastern Fish Market (during November, 1906). Through the kindness of Mr. N. Aceglav, who purchased the fish, I was enabled to secure some

* Day: Fishes of India, p. 31.

† Macleay: P.L.S. N.S.W., v, 1831, p. 328.

‡ Saville-Kent: Great Barrier Reef, 1893, p. 283.

§ Day: Fishes of India, p. 31.

useful measurements for comparison with the specimen just described. In the following table, measurements from both specimens are shown.

MEASUREMENTS OF *Genyorange setæ* (Cuvier and Valenciennes).

<i>Length overall</i> (in millimeters)	370	725
<i>Length to base of caudal fin</i> (in millimeters)	288	580
Length of head in hundredths of length to base of caudal fin	40.6	37.1
Diameter of eye (longitudinal)	7.3	5.0
Length of snout	13.9	14.0
Length of postorbital portion of head	20.8	18.1
Length of caudal fin	28.5	25.0
Length of caudal fin to shortest middle rays	19.8	17.8
Greatest height of body	46.2	46.0
Least height of caudal peduncle	12.8	12.2
Greatest thickness	17.5	18.8
Thickness at least height of caudal peduncle	5.9	6.2
Longest spine in dorsal fin (3rd)	16.3	10.2
Longest ray in dorsal fin	24.7	18.1
Longest spine in anal (3rd)	12.8	9.5
Longest ray in anal fin	26.0	—
Length of pectoral fin	38.5	37.1
Length of ventral fin	25.0	21.9
Length of base of dorsal fin (from point to point)	55.6	54.3
Length of base of anal fin	17.3	16.7
Width of base of pectoral fin	7.6	6.6

FAMILY *APLODACTYLIDÆ* (Morwongs).

Cheilodactylus spectabilis Hutton—*Brown-banded Morwong*.

Two examples of this interesting species of morwong, measuring respectively 395 and 575 mm. ($15\frac{5}{16}$ and $22\frac{5}{8}$ inches), have been obtained on our coast for the first time. The larger of the two was captured by Mr. Fred Aldrich, an officer of this Department, during August, 1903, by means of a trammel net, the locality being about one mile south of Gibbon Head, Port Hacking. The smaller specimen was taken—also in the trammel net—by Mr. Dannevig during January, 1904, at the mouth of the Wonboyn.

A description* and measurements taken from these specimens are here supplied :—

D. XVII-XVIII. 25 ; A. III. 8 ; V. I. 5 ; P. (DEX.) 2/6/6,
(SIN.) 2/6/7. L. lat. 53 ; L. trans. 5/14-16.

Length of head 3·10, greatest height of body 2·75, length of caudal fin 3·75 in the total length (without caudal fin). Eye fairly large, its diameter 5·55 in the length of the head, or 2·30 in the distance between the point of the snout and the nearest point of the orbit. Interorbital space almost flat, its width 4·00 in the length of the head. Upper profile of head from above nostrils to nape almost straight ; lips fleshy ; upper jaw the longer, the maxillary extending to beneath the posterior nostril. An obtusely-rounded prominence before each eye on the interorbital space (not nearly as pronounced as in *Cheilodactylus fuscus* Castelnau). Nostrils large, with a raised skinny margin ; the anterior oval, oblique, provided both anteriorly and posteriorly with a raised flap, which, when depressed, completely cover the opening ; the anterior flap the lower ; posterior nostril oval, much smaller than the anterior, and about half its diameter (longitudinal). About 16 gill-rakers below the angle.

Teeth villiform, in a distinct band in each jaw.

Fins : Dorsal beginning above the origin of the free part of the opercle, spines short and fairly stout, the longest (5th) 3·00 in the length of the head ; soft portion of dorsal somewhat higher than the spinous, its longest ray 2·70 in the length of the head, last ray equal to five-sixths of the diameter of the eye. Distance between last dorsal ray and beginning of base of caudal lobe, 3·75 in the length of the head, and a little greater than the width of the base of the pectoral. Origin of anal beneath about the ninth soft dorsal ray, fin short and high ; spines stout, the longest contained twice in the length of the longest ray, which is 1·50 in the length of the head. Caudal forked, lobes rounded, the upper longer than the lower. Distance between last anal ray and beginning of base of caudal lobe, 1·55 in the length of the head, or 4·80 in the total length (to caudal). Pectoral long, not much shorter than the length of the head, 3·40 in the total, reaching to three-fourths the length of the ventral. Ventral reaching to

* The description (with the exception of particulars concerning the numbers of fin-rays and scales) is based on the smaller example only.

anus, 1.70 in the length of the head. Vertical fins with a narrow, basal, scaly sheath.

Scales adherent, of moderate size, having a leathery feeling; free portion rugose; snout and preorbitals naked; cheeks, nape, and opercles, densely covered with small, firmly-embedded scales; those of lateral line, small.

Lateral line.—Well developed, gently curving from its origin to beneath about the middle of the spinous dorsal, from where it runs fairly straight right out on to the middle of the caudal fin, passing along the upper part of the caudal peduncle.

Color soon after capture (both specimens) reddish-brown, with eight dark-brown oblique bars (running at an angle of about 40 degrees from the vertical) along the body; the first across the nape and opercles, the last across the end of the caudal peduncle.

MEASUREMENTS OF *Cheilodactylus spectabilis* Hutton.

<i>Length overall</i> (in millimeters)	395	*575
<i>Length to base of caudal fin</i> (in millimeters)	312	472
<i>Length of head</i> in hundredths of length to base of caudal ...	32.1	31.8
<i>Length of caudal fin</i>	26.6	*
<i>Greatest height of body</i>	36.2	38.8
<i>Height at beginning of anal fin</i>	28.8	26.9
<i>Least height of caudal peduncle</i>	9.6	9.7
<i>Diameter of eye</i>	5.8	5.3
<i>Greatest width</i>	14.1	15.7
<i>Width of caudal peduncle at least height</i>	4.8	5.3
<i>From point of snout to nearest point of orbit</i>	13.1	14.6
<i>Width of base of pectoral fin</i>	7.7	8.1
<i>Length of base of anal fin</i>	12.5	12.1
<i>From base of last dorsal ray to beginning of caudal lobe</i> ...	8.6	6.8
<i>From base of last anal ray to beginning of caudal lobe</i> ...	20.8	20.3
<i>Length of pectoral fin</i>	29.2	*
<i>Length of ventral fin</i>	18.9	18.6
<i>Longest spine of dorsal fin</i>	10.9	9.1
<i>Longest ray of dorsal fin</i>	11.9	10.2
<i>Longest ray of anal fin</i>	21.2	17.4
<i>From insertion of caudal to bottom of caudal cleft</i>	13.8	14.4

* Fin distorted.

The difference in the number of pectoral rays on each side, as shown at the head of the description, will be of particular interest

to most observers, when it is noticed that both fishes agree in this particular. When I received the first (larger) example, the appearance of the right pectoral was such as to give one the impression that there had originally been a seventh simple lower ray, but that it had been torn away by accident, and then smoothed over in healing. This seemed the more probable, as the caudal fin was so distorted, and the three lower pectoral rays were very misshapen at their ends. Great, therefore, was my surprise when, upon receiving the second and smaller specimen (which was practically perfect), I found it to agree with the larger. I might add that the lowest pectoral ray on the left side is not much more than half the length of the next above it. It would be interesting indeed if it is found upon examination that this condition exists commonly in the species.

FAMILY *PRISTIPOMATIDÆ* (Grunters).

Terapon jarbua (Forskål).

An immature example of this species, measuring 69 mm ($2\frac{3}{4}$ inches), was forwarded from Lake Macquarie during May, 1903. It had been captured by Mr. Dannevig while he was netting for Mullet. Count Castelnau included this species in his list of fishes from Port Jackson, in 1878*, but as the record appeared to be based upon insufficient data, it has not been included in any subsequent lists of our fishes. This beautiful species has a very wide range, being known from the Red Sea, the eastern coast of Africa, the Cape of Good Hope, throughout the seas and estuaries of India (where it enters fresh water), to the Malay Archipelago, and northern and north-eastern coasts of Australia. It has also been obtained from Lord Howe Island.

Day,† referring to its occurrence in Indian waters, states that *Terapon jarbua* is a "common fish, attaining 12 or 13 inches in length.

* Castelnau : P.L.S.N.S.W., iii, 1878, p. 350.

† Day : Fishes of India, p. 70.

FAMILY *MÆNIDÆ* (Picarels).***Emmelichthys nitidus* Richardson.**

Early in September, 1906, two immature examples of this species were forwarded to this Department by Mr. Oscar Meyer, and were handed to me for determination. Mr. Meyer, in a communication, stated that they were caught at the entrance of Middle Harbour, Port Jackson, by him, with a small 'surface net.' He was after pilchards (*Clupanodon neopilchardus*), of which he netted about four bushels; and he found them mixed up with mackerels (*Scomber colias*), and the two specimens in question.

I might here mention that Mr. J. E. Chinnery, the well known fishmonger of this city, described to me, about the time that I received these specimens, some peculiar looking fishes which he had seen at the Woolloomooloo Market on the previous morning, and of which he had secured some examples. These also were amongst pilchards, and from his description I had no difficulty in recognising this species, which, among New South Wales fishes, is very unique. *Emmelichthys nitidus*, then, was probably present in our waters at that time in considerable quantities.

The two examples forwarded by Mr. Meyer measure respectively 160 and 165 mm. (about $6\frac{1}{2}$ inches). The formula for the dorsal and anal fins in both is as follows:—D. X. III. I. 9; A. III. 10. In each instance the first dorsal spine is short and very slender.

FAMILY *CARANGIDÆ* (Yellow-tails, &c.).***Caranx (Alectis) gallus* (Linnaeus)—*Silvery Moon-Fish*.**

PLATE IV.

During April, 1906, this Department received, through the kindness of Mr. Chinnery of this city, a beautiful specimen of this remarkable and grotesque looking fish. It had been captured at Evans River (in salt water), a little to the north of the Clarence River, by Mr. Thomas Paddon.

It should be here stated that this species is considered, by some writers, to be the adult form of the Pennant Fish, *Alectis ciliaris*

CARANX (ALECTIS) GALLUS (Linnaeus)—*Silvery Moon-Fish*.

(Bloch), and this appears to me to be highly probable. The latter occurs on this coast principally during the months of February, March, and April.

A few measurements, taken from the Evans River example, are here given—

MEASUREMENTS OF *Caranx (Alectis) gallus* (Linnaeus).

Length overall (in millimeters)	456
Length to base of caudal fin (in millimeters)	360
Length of head in hundredths of length to base of caudal fin. ...	28.9
Diameter of eye	6.4
Height of preorbital bone	9.2
Length of caudal fin	26.7
Length of pectoral fin	36.7
Length of ventral fin	15.5
Height at anterior edge of eye	28.9
Height at posterior edge of eye	36.5
Height at insertion of ventral fin	39.5
Height at end of opercle	40.5
Height at beginning of base of dorsal fin	47.8
Height at beginning of base of anal fin	51.0
Least height of caudal peduncle	3.9

Elagatis bipinnulatus (Quoy and Gaimard)—*Runner*.

PLATE V.

A fine example of this species, measuring 700 mm. (27½ inches), was received by this Department during March, 1905. It was forwarded through Dr. James C. Cox, Commissioner of Fisheries, by Mr. J. E. Chinnery, fish merchant, of this city. Mr. Chinnery stated that it had been captured off North Head, Port Jackson.

The species is very widely diffused and is of a highly pelagic nature. In America it is known under the vernacular name of "Runner." It does not appear to have ever been recorded from the waters of any portion of Australia before, and is certainly new to the New South Wales Fauna.

A detailed description of this remarkable fish is here given. By comparing this description with those of Day* and Jordan

* Day : Fishes of India, p. 228.

and Evermann* it will be seen that there is a considerable amount of variation.

D. VI. I. 25 + 2; A. II. 17 + 2; P. 20. Scales about 100.

Length of head 4.00, greatest height of body 5.00, length of caudal fin 3.45 in the total length (without caudal). Longitudinal diameter of eye 6.45, length of snout 2.55, length of mandible 2.20 in the length of the head.

Body long and slender; head moderately long and pointed; snout long and conical; jaws about equal; maxillary broad and triangular, its greatest width being contained about 2.35 in its length; supplemental maxillary long and narrow, slipping under the thin preorbital. Eye fairly small, situated a little forward of the centre of the head; interorbital space broad, smooth, and convex; preopercle and opercle entire. Gill-rakers numerous, principally below the angle, cephalic ones becoming gradually shorter, the longest about 1.30 in the longitudinal diameter of the eye.

Teeth in broad, villiform patches on the jaws, vomer, and palatines; tongue devoid of teeth, but covered with minute asperities.

Fins: Spinous dorsal originating above the last fifth of the pectoral; spines short and weak, in life almost folding in a groove, longest spines (3rd and 4th) 2.20 in the length of the snout, the fin detached from the second dorsal; second dorsal long, the anterior rays elevated, the longest 2.70 in the length of the head; last ray a little shorter than the diameter of the eye. Last ray of dorsal finlet greatly produced; its length 4.00 in the length of the head. Distance between dorsal finlet and base of last ray of second dorsal 1.60 in the diameter of the eye. Distance between last ray of dorsal finlet and base of caudal lobe 3.85 in the length of the head. Origin of anal beneath thirteenth dorsal ray; fin very low, with exception of anterior portion, the longest ray of which is 3.85 in the length of the head. Detached anal spines obsolete. Caudal very deeply forked, lobes long and slender (lower lobe slightly the longer), their length about equal to the distance from the snout to the first half of the pectoral fin.

* Jordan and Evermann: Bull. 47, U.S. Nat. Mus. (1) 1893, p. 936. Also Bull. U.S. xxiii (1) 1905, p. 185.

ELAGATIS BIPINNULATUS (Quoy and Gaimard)—*Runner*.

Pectoral short, scarcely falcate, its length contained twice in that of the head. Ventrals slightly shorter than the pectorals.

Scales small and cycloid. Head, with exception of cheeks and postorbital region, naked. Scales on cheeks in about 7 or 8 series. Scales on nape and ante-dorsal region, smaller than those of the rest of the body.

Lateral line well-developed, continuous, forming a low, broad keel on the posterior part of the caudal peduncle.

Color when fresh: Above, deep bluish-black; below, yellowish-silvery. Two conspicuous blue lines along each side of body; the upper narrow, passing from the upper edge of the orbit in an almost direct line to the upper part of the caudal peduncle; the lower broader than the upper, beginning from the anterior edge of the maxilla, passing under the eye across the opercle and above the pectoral fin in an irregular line towards the caudal fin*.

Weight of specimen, 4 lb. 1 oz.

MEASUREMENTS OF *Elagatis bipinnulatus* (Quoy and Gaimard).

Length overall (in millimeters)	700
Length to base of caudal fin (in millimeters)	54.3
Length of head in hundredths of length to base of caudal	24.9
Length of caudal fin	28.9
Greatest height of body (at beginning of second dorsal)	20.1
Height through centre of eye	11.0
Height at end of opercle	17.1
Height at insertion of ventral fin	18.2
Height at beginning of anal fin	18.1
Least height of caudal peduncle	4.6
Width at posterior extremity of maxilla	8.3
Width through centre of each eye	9.8
Width at insertion of pectoral fin	12.5
Width at beginning of second dorsal fin	12.0
Width at beginning of anal fin	10.7
Width at least height of caudal peduncle	4.4
Length of snout	9.8
Length of post-orbital portion of head	11.2
From point of snout to insertion of pectoral fin	25.2
From point of snout to insertion of ventral fin	28.3
From point of snout to beginning of spinous dorsal fin	35.4
From point of snout to beginning of second dorsal fin	45.5
From point of snout to extremity of base of second dorsal fin	86.0
From point of snout to dorsal finlet	88.8
From point of snout to beginning of anal fin	61.7
From point of snout to extremity of base of anal fin	86.6
From point of snout to anal finlet	88.8
From insertion of caudal to bottom of caudal cleft	7.4

*Possibly this had reached the tail in life, but on the posterior portion of the body it was very indistinct and faded in my specimen.

FAMILY *SCOMBRIDÆ* (Mackerels).*Auxis thazard* (Lacépède).—*Frigate Mackerel*.

During 1903 a small shoal of this species made its appearance in the waters of Port Jackson, and two specimens were forwarded to the Department of Fisheries for determination. These were both about 300 mm. in length. As this widely-distributed pelagic fish usually roams about in large shoals, it is highly probable that they were present in considerable quantities in the vicinity of Port Jackson at the time the specimens above referred to were taken.

When freshly taken, these examples had the appearance of polished lead, and appeared to be familiar to some of the Sydney fishermen, who called them "Leadennalls."

In 1878, Castlenau described in the Proceedings of the Linnean Society of New South Wales*, under the title of *Auxis ramsayi*, a species which is probably identical with the one under discussion. Castlenau stated that "on the 6th April, 1878, numerous specimens of this species appeared in the Sydney market. The fishmongers called them *horse-mackerel*." Macleay included it in his catalogue†, and stated that it was the "Horse Mackerel of the Sydney fishermen." This, however, is slightly incorrect, as the Horse Mackerel of the Sydney fishermen is *Sarda chilensis* (Cuvier and Valenciennes).

It is of interest to note that *Auxis thazard* was first described in 1801 from a locality between 6 and 7 S. lat., on the coast of New Guinea.‡

Germo germo (Lacépède).—*Albacore*.

An example of this species ran ashore at Port Macquarie during 1903.§ The fish was in pursuit of small fry at the time. Mr. J. B. Grane, Inspector of Fisheries, who forwarded the head, tail, and fins for identification, furnished the following particulars, taken while the specimen was fresh:—"Length, 43½ inches; girth, 28½ inches; weight, 62 lb.; colour, dark-brown on

* Castlenau: P.L.S. N.S.W., iii, 1878, p. 382.

† Macleay: P.L.S. N.S.W., v, 1881, p. 558.

‡ Lacépède: Hist. Nat. Poiss., iii, 9, 1801.

§ I have made a short reference to this occurrence in my "Fishes of Australia," 1906, p. 165.

back, silver-grey sides and silver belly." The long, falcate pectoral fin, which is so characteristic of this species, measured in the present instance 440 mm.

It is hardly surprising that this large widely-distributed pelagic scombroid should be found to occur on our coast, but it has not been previously recorded hence, nor does it appear to have ever been recorded from any Australian locality.

It may be here stated that the validity of Jordan's genus *Germo*, based on the large size of the pectoral fin, and which is here used, is open to doubt.

Gasterochisma melampus Richardson.

PLATE VI.

Towards the latter end of August, 1906, two specimens of this highly remarkable fish, measuring respectively 372 and 405 mm. ($14\frac{5}{8}$ and 16 inches), were captured at Shoalhaven, New South Wales, amongst Garfish (*Hyporhamphus*) and were forwarded to Sydney.* They were presented to this Department by Mr. Chinnery, of this city.

This is the first record of the occurrence of *Gasterochisma melampus* Richardson in the waters of Australia (though it has been recorded from Tasmania), and its capture so far in a northerly direction as Shoalhaven, will be regarded as of great interest. It was just a few days after the capture of these that the examples of that other remarkable southern species, *Emmelichthys nitidus* Richardson, were obtained in Port Jackson.

As any information in regard to this striking form will be of value to ichthyologists, I here take the opportunity of giving a complete description of the specimens under notice.

B. VI. ; D. XVII. I. 8-9 + 7 ; A. II. 10 + 6 ; P. 21-22 ;

V. I. 5 ; C. 17. Scales about 75.

Length of head 4.00-4.20, greatest height of body 4.15-4.50, length of caudal fin 4.05-4.55 in the total length (without caudal). Vertical diameter of eye 6.10-6.25, length of snout 2.90, length of mandible 2.10-2.15, width of interorbital space 3.30-3.40 in the length of the head.

* Unfortunately these were a little damaged in transit. As in so many other scombroids, their bodies are very tender.

Body long, slender, and highly compressed. Head of moderate size, pointed; snout acute; lower jaw rather longer than upper; maxillary narrow, its posterior border for the greater part of its length slipping beneath the thin preorbital. Eye fairly small, situated well forward of the centre of the head. Interorbital space high, smooth, and convex; preopercle smooth; opercle finely ciliated. Maxilla reaching to below first third of eye.

Teeth small and conical, forming single series in both jaws. Long narrow patches on the palatines and a small patch on the head of the vomer. Tongue without teeth.

Fins: Spinous dorsal originating a little behind insertion of pectoral; spines long, weak and flexible, folding in a groove, longest spine, 2.10–2.25 in the length of the head and about equal to the length of the postorbital portion of the head; second dorsal short, its anterior rays elevated, the longest 2.90–3.05 in the length of the head, last two rays almost separated into finlets. Last two dorsal finlets connected by a very thin membrane. Distance between base of last dorsal finlet and base of caudal lobe 4.25–4.55 in the length of the head. Origin of anal beneath about the middle of the second dorsal; fin similar to, though lower than, the second dorsal; its longest ray 3.85–4.05 in the length of the head. Last two anal finlets connected by a very thin membrane. Caudal very deeply forked. Pectoral short, scarcely falcate, its length contained 1.75–1.80 in the length of the head. Ventrals exceedingly large,* broad, and may be laid back and completely concealed in a deep fissure on the abdomen. This fissure extends from the base of the ventrals to the anus, and in its deepest part is almost equal to the diameter of the eye. The ventral is about two and a half times as long as the pectoral, and is contained 2.80–2.85 in the length of the head.

Scales deciduous, of moderate size, thin and cycloid; concentrically striated. Upper part of head from above eyes forward

* The possession of these relatively enormous ventral fins would appear at first sight to be altogether out of keeping with a fish which is quite obviously pelagic in habit and a rapid swimmer; but when the highly-compressed form and somewhat wedge-shaped abdomen are considered, it is seen that if the fish were moving slowly it could hardly retain its balance in the water without the aid of some such organs. Particularly must they be of use if, as is probable, this species subsists to some extent upon slow-moving pelagic organisms. Of course, in rapid swimming, the ventral fins would be laid back in their groove.

GASTEROCHISMA MELAMPUS Richardson.

naked, cheeks and postorbital region covered with scales. Opercle naked.

Lateral line well developed, continuous.

Color, when fresh: Above, deep bluish-black, bluish on the sides; below, silvery white. Ventrals black.

MEASUREMENTS OF *Gasterochisma melampus* Richardson.

<i>Length overall</i> (in millimeters)	372	405
<i>Length to base of caudal fin</i> (in millimeters)	305	325
Length of head in hundredths of length to base of caudal ...	23.9	24.9
Length of caudal fin	22.0	24.6
Height of body at insertion of ventral fin	22.3	24.0
Height at beginning of insertion of anal fin	22.3	23.0
Least height of caudal peduncle	3.6	3.7
Greatest width of body	10.8	10.8
Length of snout	8.2	8.6
Length of postorbital portion of head	10.8	11.1
From point of snout to insertion of ventral fin... ..	23.3	23.0
From point of snout to insertion of pectoral fin	24.3	25.2
From point of snout to beginning of spinous dorsal fin ...	25.9	27.4
From point of snout to beginning of second dorsal fin ...	58.7	60.6
From point of snout to beginning of anal fin	63.6	64.0
Longest spine in first dorsal fin	11.5	11.1
Longest ray in second dorsal fin	7.9	8.6
Longest ray in anal fin	6.2	6.5
Length of pectoral fin	13.1	14.2
Length of ventral fin	35.4	35.1

Until more attention has been devoted to this species it will be impossible to make an authoritative statement; but it may be here mentioned that Regan* considers that *Gasterochisma* is the young of that large scombroid, *Lepidothyngus*; and he draws attention to the fact that "the smaller size of the ventrals in the larger fish is paralleled in the genera *Nomeus*, *Psenes*, *Lirus*, &c."

FAMILY BRAMIDÆ (Pomfrets).

Bramichthys woodwardi Waite.

A single example of this recently described species† was captured by me during 1901, and has been in my possession since.

* Regan: A.M.N.H., 7, x, p. 120.

† Waite: Rec. Aust. Mus., vi, 2 (1905), p. 72, pl. xiv.

I obtained it by means of hook and line off the rocks at Manly, Port Jackson. At the time that I captured it, night was just coming on, and the large-eyed fishes like *Pempheris* and *Beryx* were beginning to move about.

This is the second example only of this species so far recorded. The type was taken in the trawl, during 1904, off the coast of Western Australia (Mandurah); the occurrence of the species in our waters, as shown by my specimen, is therefore of considerable interest, as it demonstrates a very considerable geographical distribution.

As the Port Jackson example differs to some extent from the type, I here append a brief description:

D. V. 28; A. IV. 28; V. I. 5; P. 16; C. 17†.

L. lat. 50; L. trans. 7/18.

Length of head 3.15 in the total length (without caudal); height of body at insertion of dorsal and insertion of anal equal, 2.15 in the total length, and equal to the length of the base of the anal. Length of caudal fin, 2.84 in total length. Longitudinal diameter of eye 2.35, length of snout 4.65 in the length of the head. Least height of caudal peduncle 9.10 in the total length, 4.20 in the greatest height, and equal to the distance from the posterior end of the base of the anal fin to the insertion of the caudal fin.

Fins: Longest dorsal ray 4.15 in the total length, nearly twice in the greatest height, and slightly longer than the longest anal ray. Length of pectoral fin 3.65, length of ventral fin 7.60 in the total length; the length of the ventral fin being equal to the longitudinal diameter of the eye. Length of base of dorsal fin 2.00 in the total length, and slightly longer than the base of the anal. Distance from end of base of dorsal to insertion of caudal 7.00 in the total length. Shortest rays of caudal fin a little more than half the length of the longest rays.

Scales, with exception of those on the lateral line, rather deciduous.

Length of specimen 123 mm. ($4\frac{7}{8}$ inch).

Color of the fish when fresh, a uniform reddish silvery.

† Supplementary rays not included.

FAMILY OPHIDIIDÆ.

Genypterus blacodes (Forster)—*Australian Rockling*.

During October, 1904, an example of this southern ophidioid, measuring 590 mm. ($23\frac{1}{4}$ inches), was forwarded for determination by Mr. J. O. Batchelor, Commissioner for Fisheries. It had been captured on our coast, at Jervis Bay. A second specimen was presented by Mr. J. E. Chinnery during May, 1906. This was from Ulladulla, and measured 675 mm. ($26\frac{9}{16}$ inches). A remarkable feature about the second specimen is that the barbels are conspicuous by their absence, their loss having, apparently, been brought about by some accident, as there is a very pronounced contusion in the vicinity of and a little posterior to the position in which they should naturally be.

The following description is based upon these two specimens:—

Length of head 4.40–4.55, height of body at anal 8.00–8.75, width at end of opercle 10.35–10.90 in the total length (without fin). Longitudinal diameter of eye 7.40–8.35, length of snout 5.45–5.90, width of interorbital space 5.70–6.15 in the length of the head.

Body long and somewhat eel-like; tail tapering and highly compressed; head long; snout obtusely rounded; jaws very unequal, the lower much shorter than the upper, when closed fitting within the band of long pointed teeth of the upper jaw; maxillary broad and triangular, extending to about two-thirds of the diameter of the eye beyond that organ. Eye fairly small, situated in the first third of the length of the head; interorbital space wider than diameter of eye, flattish, with a slight depression in the centre. In the smaller specimen, a rounded protuberance on the median line of the snout between the posterior nostrils; this is barely noticeable in the larger. Opercle ending in a membranaceous flap, which covers a blunt spine.

Teeth: Each jaw is armed with an outer series of strong conical teeth; similar teeth on vomer and palatines. A band of villiform teeth in each jaw—more noticeable in the upper—inside the strong conical ones.

Fins: Dorsal and anal continuous, forming one fringing fin. Dorsal commences above posterior half of pectora; composed

like anal, of exceedingly numerous closely-set soft rays; its greatest height 4·65–5·30 in the length of the head. Distance between end of opercle and origin of anal, a little more than the length of the head. Greatest height of anal 5·00–5·55 in the length of the head. Pectoral rounded, inserted in the lower half of the depth of the body, about $2\frac{1}{2}$ times as long as the width of its base; its length 2·45–2·60, the width of its base 6·15–6·25 in the length of the head. Longer portion of barbel (in smaller specimen only) 2·30 in the length of the head.

Scales very small; snout naked.

Lateral line distinct, and continued to within a short distance of the end of the tail.

Color: A light ground, marbled all over with irregular patches of dark-brown; back of head darkest.

MEASUREMENTS OF *Genypterus blacodes* (Forster).

<i>Length overall</i> (in millimeters)	590	675
<i>Length to base of caudal fin*</i> (in millimeters)	570	655
Length of head in hundredths of length to base of caudal ...	21 9	22·6
Height of body at beginning of base of anal fin	12 6	11·5
Height through centre of eye	7·5	6·9
Width at end of opercle	9·6	9·2
Width above beginning of base of anal fin	7·4	7·0
Diameter of eye	2·6	3·1
Width of interorbital space	3·9	3·7
Length of snout	4·0	3·8
From point of snout to end of maxilla	8·2	8·7
From point of snout to base of pectoral fin	19·3	20·6
From point of snout to beginning of base of dorsal fin ...	24·9	24·9
From point of snout to beginning of base of anal fin ...	46·1	47·8
Greatest height of dorsal fin	4·7	4·3
Greatest height of anal fin	4·4	4·1
Length of pectoral fin	8·9	8·7
Width of base of pectoral fin	3·5	3·7
Length of barbel	9·5	—
Length of tail (without fin)	53·9	52·2

* There is no true caudal fin.

I think there is no doubt that Castelnau's *Genypterus australis*† is identical with this species.

†Castelnau : Proc. Zool. and Acclim. Soc., Vict., i, 1872, p. 164.

FAMILY TETRAODONTIDÆ (Toad-Fishes)

Sphæroides pleurostictus (Günther)—*Banded Toado*.

Three examples of this pretty little toad-fish have been received from Clarence River. A considerable variation in color is apparent. All three possess four broad, dark, half bands on the upper portion; the first across the head between the eyes, the second between the pectoral fins, the third at the base of the dorsal fin, and the fourth over the caudal peduncle. In two of the specimens the three posterior bands end on each side in prominent round spots, as described by Günther,* and in one of these examples there are additional smaller spots about the middle of the back. In the third specimen there is a prominent dark spot between the second and third bands, while the upper half is profusely covered with somewhat similar though smaller spots.

Günther's type was taken in the waters of Queensland.

There appears to me little doubt that Castelnau's *Tetrodon bibroni*,† from the entrance of Brisbane River, is identical with this species. The only point of difference that is worthy of note is that in Castelnau's description the width of the interorbital space is given as being "equal to one-half the distance from the end of the snout to the base of the dorsal," while in my specimens it is uniformly about one-third. If it were as stated by Castelnau, the head would have to be so wide, or the dorsal fin so far forward, that it appears fairly certain that an error has crept in.

* * * * *

Since the foregoing was written, and during the month of April, 1907, while on a visit to some of the northern rivers of New South Wales, I found this species to be exceedingly common around the foreshores, in the estuaries of the Bellinger and Nambucca Rivers, as well as at Camden Haven, where, I have reason to believe, it is very destructive to young oysters.

*Günther: Proc. Zool. Soc. Lond., 1871, p. 674.

†Castelnau: P.L.S., N.S.W., ii, 1877, p. 247.

[Six plates.]

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